

Speleognathinae Collected From Birds In North America (Acarina: Ereyenetidae)¹

A. FAIN

INSTITUT DE MÉDECINE TROPICALE PRINCE LÉOPOLD, ANTWERPEN, BELGIUM

and

K. E. HYLAND

DEPARTMENT OF ZOOLOGY, UNIVERSITY OF RHODE ISLAND, KINGSTON, R. I. 02881

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Abstract: Fourteen species and subspecies of nasal mites belonging to the subfamily Speleognathinae and taken from birds are reported, including eight new host records. Two new subspecies are described: *Neoboydaia philomachi thalasseus* from *Thalasseus maximus* (royal tern) and *Sterno hirundo* (common tern) from Perry, Florida, and E. Sandwich Mass., respectively; and *Boydaia cyanerpes hylocichla* from *Hylocichla ustulata* (russet-backed thrush) taken at Big Falls, Newfoundland.

The speleognathine fauna is not exceedingly abundant in North American birds nor has it been the subject of wide-spread investigation. Except for the original descriptions there is relatively little literature establishing additional host records or distributional patterns. Two works, those of Fain and Hyland (1970) and Pence (1973), have added significant new records, and it is our intention that the present work augment the existing host and distributional lists.

The mites which form the basis of this study have been collected from the nasal passages of a variety of avian hosts and from several widely separated localities in North America. Two new subspecies are described and several new host records have been noted. Fourteen species and subspecies have been recorded.

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Genus *Neoboydaia* Fain, 19581. *Neoboydaia philomachi eroliae* (Fain & Hyland, 1970)

This subspecies was described from *Erolia minutilla* and *Actitis macularia* in Mexico. It is distinguished from the type female by the following characters:

- (1) Setae *ic2* and coxal II are toothed (Da), whereas in the types they are very fine and piliform (Na). See Fain (1970) for setal nomenclature.
- (2) In the typical form femora I and II bear three foliate and striate setae (Sd) and femur III bears one seta Sd in addition to the other setae. In the specimens of *N. p. eroliae* collected from the type hosts (*E. minutilla* and *A. macularia*) these setae (Sd) are replaced by cylindrical and dentate setae (Da).

We have collected this form from:

- (1) *Erolia minutilla* (least sandpiper) in Galilee, R. I. (No. H62-08-21-3; Coll. G. West) 11 females, 3 larvae;
- (2) *Actitis macularia* (spotted sandpiper) in Charlestown, R. I. (No. H61-07-24-15; Coll. L. TerBush) 1 female;
- (3) *Arenaria interpres* (ruddy turnstone) in Witless Bay, Newfoundland (No. H62-08-07-4; Coll. K. Hyland et al.) 11 females and 1 male;
- (4) *Limnodromus griseus* (dowitcher) in Charlestown, R. I. (No. H61-07-24-8; Coll. L. TerBush) 5 females and in South Kingstown, R. I. (No. H61-08-09-6; Coll. L. TerBush) 16 females, 2 larvae;
- (5) *Tringa solitaria* (solitary sandpiper) in Rushville, Ncbr. (No. A59-08-31-10; Coll. W. Atyeo and N. Braasch) 6 females.

Arenaria interpres, *Limnodromus griseus* and *Tringa solitaria* appear to be new host records.

Those specimens taken from *Arenaria* and *Limnodromus* carry two type Sd and one type Da setae on femora I and II. On femur III one seta of type Sd is present. The other characters compare favorably with those of the subspecies *eroliae*.

Clark (1964) redescribed *N. philomachi* from specimens which he collected from the hosts *Totanus melanoleucus*, *Totanus flavipes*, and *Pisobia melanotos* in Texas. The drawings which he gave with this redescription apparently are of the subspecies *eroliae*.

Pence (1973) reported *N. philomachi* from several charadriiform hosts without indicating the subspecies. Hosts included the type host, *Erolia minutilla*, plus *Capella gallinago* (common snipe), *Totanus melanoleucus* (greater yellowlegs) and *Limnodromus scolapaceus* (long-billed dowitcher). Since the host genus *Philomachus* is not represented in North America it seems reasonable to expect that *N. philomachi philomachi* is absent from North American birds and to consider that *N. p. eroliae* is distinct.

2. *Neoboydaia philomachi thalasseus* subsp. nov.

This new subspecies can be distinguished from the other two subspecies by the presence of only three pairs of genital setae in the female (one pair of internals and two pairs of externals, all of type Na) whereas in both *N. p. philomachi* and *N. p. eroliae* there are six

pairs of setae of which the three externals are of type Na and the three internals are of type Da. Coxal setae and *ic2* are similar to subspecies *eroliae*. Idiosoma of holotype female 455 microns in length and 142 microns maximum width.

This subspecies was collected from:

- (1) *Thalasseus maximus* (royal tern) in Perry, Florida (No. A60-07-14-4; Coll. W. Atyeo et al.) holotype and 14 paratype females plus 2 paratype larvae;
- (2) *Sterna hirundo* (common tern) in E. Sandwich, Mass. (No. H61-08-12-3; Coll. K. Hyland et al.) 4 females, 1 male, 1 larva.

Holotype deposited in the U.S. National Museum, Washington, D. C.; paratypes in the Institut de Médecine Tropicale Prince Léopold, Antwerpen, Belgium and University of Rhode Island, Museum of Zoology, Kingston, R. I.

3. *Neoboydaia colymbiformi* Clark, 1964

This species was described from *Colymbus nigricollis californicus* (eared grebe) in California. We recorded it earlier from *Podilymbus podiceps* (pied-billed grebe) in Mexico (Fain & Hyland, 1970) and Pence (1973) has reported it from the same host in Louisiana.

We have also found it in a new host, *Podiceps caspicus* (eared grebe) in Rushville, Nebr. (No. A59-08-31-6; Coll. N. Braasch and W. Atyeo) 9 females, 1 larva.

Genus *Astrida* Fain, 1955

Subgenus *Neastrida* Fain, 1963

1. *Astrida* (*Neastrida*) *coccyzae* Pence, 1973

We have collected this species from the type host *Coccyzus americanus* (yellow-billed cuckoo), as follows:

- (1) Hebron, Nebraska (No. A59-07-08-3; Coll. N. Braasch) 3 females; and
- (2) North Kingstown, R. I. (No. H62-08-23-4; Coll. A. Hawkes) 8 larvae.

Genus *Trispeleognathus* Fain, 1958

1. *Trispeleognathus womersleyi* (Fain, 1955)

This species has been taken from *Anas discors* (blue-winged teal) collected in both Rhode Island and Nebraska as follows:

- (1) Allenton, R. I. (No. H62-09-03-4; Coll. L. TerBush) 10 females;
- (2) Valentine, Nebr. (No. A59-09-02-1; Coll. W. Atyeo) 1 female;
- (3) Rushville, Nebr. (No. A59-08-31-1; Coll. N. Braasch and W. Atyeo) 2 females.

To our knowledge it has not been reported from the blue-winged teal previously.

Genus *Boydaia* Womersley, 1953

Subgenus *Boydaia* Womersley, 1953

1. *Boydaia* (*Boydaia*) *hirundoae* Fain, 1956

This species has been collected from the type host, *Hirundo rustica* (barn swallow), as follows:

- (1) Richmond, R. I. (No. H62-07-06-1; Coll. A. Moorhouse) 6 females and 1 male;
- (2) Waterford, Conn. (No. H62-05-12-1; Coll. D. Blake) 3 females and 1 male.

Pence (1973) has recently reported this same species from the type host in Louisiana.

2. *Boyaia (Boyaia) tyrannis* Ford, 1959

Specimens of this species have again been taken from the type host, *Tyrannus tyrannus* (kingbird), from Michigan as follows: Co. Rd. 400, Kellogg Gull Lake Biol. Sta., Mich. (No. 59-08-10-5; Coll. K. Hyland et al.) 2 females and 5 larvae.

Although Fain and Aitken (1968, 1970) and Fain and Hyland (1970) have reported this species from various tyrannids, cotingids and pipnids from Trinidad, Mexico and Brazil, only the type host has been found infested with this species north of Mexico.

3. *Boyaia (Boyaia) colini* Clark, 1958

We have taken this species from the type host, *Colinus virginianus* (bobwhite), collected in Charlestown, R. I. (No. H62-09-01-1; Coll. A. Moorhouse) 2 females and 4 larvae. This host is the only host thus far reported harboring *B. colini*.

4. *Boyaia (Boyaia) agelaii* Fain and Aitken, 1968

This species is distinguished from *B. (B.) quisicali* Clark, 1960 by the character of the claws on tarsi II of the larva. The elongate claw has a different shape and the short claw is much shorter than in *quisicali*.

Our collection includes the following hosts:

- (1) *Spiza americana* (dickcissel) from Grand Island, Nebr. (No. A59-06-10-14; Coll. N. Braasch and W. Atyeo) 9 females, 1 male, and 1 larva.
- (2) *Molothrus ater* (brown-headed cowbird) from El Paso, Texas (No. H62-11-24-4; Coll. G. West) 3 females.
- (3) *Cassidix mexicana* (boat-tailed grackle) from Lake Placid, Florida (No. A60-07-25-2; Coll. W. Atyeo and N. Braasch) 1 female.

It should be noted that Pence (1973) placed material collected from *Molothrus ater* in *B. quisicali* rather than in this species. Apparently he did not examine the larvae collected from *M. ater* which is the type host for *B. quisicali*. He also assigned material from *Cassidix mexicanus* to *B. quisicali* rather than to *B. agelaii*.

The dickcissel (*Spiza americana*) constitutes a new host record.

5. *Boyaia (Boyaia) loxiae* Fain, 1963

Eight female specimens collected from *Icterus galbula* (Baltimore oriole) (No. A60-05-15-9; Coll. W. Atyeo) taken at Nebraska City, Nebr., have been assigned to this species. In the absence of larvae it is impossible to distinguish with certainty this species from others belonging to the "statulata" group; however, this is apparently the first record of this species in North America. See Fain, 1971.

6. *Boyaia (Boyaia) cyanoerpes hylocichla* subsp. nov.

This subspecies can be distinguished from the type by the following characters in the female:

- (1) Femur I has 6 or 7 setae (compared with 5 in the type):
- (2) Pattern of lines on the base of gnathosoma differs from the type particularly in having two bands in the middle which converge posteriorly (instead of two bands which diverge posteriorly);
- (3) Setae on the body and legs are longer: setae *d1-d4* are 18 microns long compared with 13-15 microns in *B. h. hylocichla*; posterior intercoxal setae 15 microns compared with 12 microns; setae on tibia I are 21-25 microns compared with 15-18; and setae on femur I 12-24 microns in contrast to 8-15.

- (4) Palpal solenidion is vestigial, thinner and shorter (1 micron) instead of 3-3.5 microns as in *B. h. hylocichla*.

Idiosoma of holotype female is 405 microns long by a maximum of 315 microns wide.

Host: Holotype and 5 paratype females were taken from *Hylocichula ustulata* (russet-backed thrush) collected at Big Falls, Newfoundland (No. H62-08-01-9; Coll. K. Hyland et al.). Holotype in the U.S. National Museum, Washington; paratypes in the collections of the authors.

Subgenus *Coboydaia* Fain, 1971

7. *Boydaia* (*Coboydaia*) *nigra nigra* Fain, 1955

The type host of this species is *Serinus sulphuratus shelleyi* (Fringillidae) from Rwanda. We have recorded the same species from the following hosts in North America:

- (1) *Carpodacus mexicanus* (house finch) from El Paso, Texas (No. H62-11-24-10; Coll. G. West) 5 females, 1 male and 2 larvae.
- (2) *Spizella passerina* (chipping sparrow) El Paso, Texas (No. H62-11-24-14; Coll. G. West) 5 females, 2 males, and 3 larvae.

Both are new host records.

8. *Boydaia* (*Coboydaia*) *nigra icteri* Fain and Hyland, 1970

This subspecies was described earlier by us from *Icterus spurius* (orchard oriole) in Mexico. We have also identified it from the same host from Lincoln, Nebr. (No. A59-06-05-1; Coll. W. Atyeo and N. Braasch) one female. We have also recorded it from *Icterus galbula* (Baltimore oriole) in St. Joseph Co., Michigan (No. C60-08-23-13; Coll. Unknown) 7 females.

9. *Boydaia* (*Coboydaia*) *sturnellae* Clark, 1960

We have recorded this species from the type host, *Sturnella magna* (meadow lark) collected at:

- (1) Lake Placid, Fla. (No. A60-07-23-10; Coll. W. Atyeo et al.) 8 females, 4 males, and 4 larvae; and
- (2) Hope Valley, R. I. (No. H62-07-18-1; Coll. A. Moorhouse) 2 larvae.

B. (C.) sturnellae is close to *B. (C.) nigra nigra* Fain, 1955. In the female it can be distinguished from *B. nigra* principally by the slightly thinner sensillae, which measure 42 microns in our specimens. In the larva, claws I-III resemble those of *B. nigra* in form but they are shorter. Claw III is 33 microns long (hook included) compared with 45 to 53 microns for *nigra*.

B. (C.) sturnellae can be distinguished from *B. (C.) amandavae* Fain, 1962, in the larval form by the shape of claw I which is recurved apically and terminates in a point whereas in *B. amandavae* the claws are not recurved apically and they are dilated (see Fain, 1971, fig. 41). They can be distinguished in the female by the greater elongation of the leg segment, by the different chaetotaxy and by the sensillae.

B. (C.) sturnellae appears to be specific for the meadow lark.

Literature Cited

- CLARK, G. M. 1958. One new and one previously unreported species of nasal mite (Acarina, Speleognathidae) from North American birds. Proc. Helm. Soc. Wash. **25**(2): 78-86.

- . 1960. Three new nasal mites (Acarina: Speleognathidae) from the gray squirrel, the common grackle, and the meadowlark in the United States. *Proc. Helm. Soc. Wash.* **27**(1): 103–110.
- . 1964. One new and one previously unreported nasal mite (Acarina: Speleognathinae) from North American birds, with observations on speleognathid taxonomy. *J. Parasit.* **50**(1): 158–162.
- FAIN, A. 1955. Sur le parasitisme des fosses nasales chez les mammifères et les oiseaux par les Speleognathidae. *Ann. Soc. Belge Méd. Trop.*, **35**(6): 689–700.
- . 1956a. Les acariens de la famille Speleognathidae Wom. au Ruanda-Urundi. *Rev. Zool. Bot. Afr.* **53**(1–2): 17–50.
- . 1956b. Nouvelles observations sur les Acariens de la famille Speleognathidae parasites des fosses nasales chez les batraciens, les oiseaux et les mammifères. *Ann. Parasit. Hum. et Comp.* **31**: 643–662.
- . 1956c. Notes sur les Acariens du genre *Boydaiia* Wom. avec description d'une espèce nouvelle. *Riv. Parasitol.* **17**: 27–34.
- . 1963. Chaetotaxie et classification des Speleognathinae. *Bull. Inst. Roy. Sci. Nat. Belg.* **39**(9): 1–80.
- . 1970. Nomenclature des poils idiosomaux et description de trois espèces nouvelles dans la famille Ereyneidae (Trombidiformes). *Acarologia.* **12**(2): 314–325.
- . 1971. Clé et liste des espèces du genre *Boydaiia* Womersley (Ereyneidae: Trombidiformes). *Acarologia.* **13**(1): 98–112.
- , AND T. H. G. AITKEN. 1968. Les Acariens parasites nasicoles des oiseaux de Trinidad (Indes Occidentales). II. Ereyneidae: Speleognathinae. *Bull. Ann. Soc. Roy. Ent. Belg.* **104**: 80–84.
- , AND ———. 1970. Acariens nasicoles d'oiseaux et de mammifères du Brésil. IV. Nouveaux Ereyneidae (Trombidiformes) et Turbinoptidae (Sarcoptiformes) de la région de Belém (Nord Brésil). *Acarologia.* **12**(2): 1326–1338.
- , AND K. E. HYLAND. 1970. Acariens nasicoles des oiseaux du Mexique. III. Familles Ereyneidae et Turbinoptidae. *Bull. Ann. Soc. Roy. Ent. Belg.* **106**: 37–46.
- FORD, H. G. 1959. *Boydaiia tyrannis* n. sp. (Acarina, Speleognathidae), a new mite from the nasal cavity of the Eastern Kingbird, *Tyrannus tyrannus* (Linnaeus). *Trans. Amer. Micros. Soc.* **78**(4): 379–385.
- PENCE, D. B. 1973. The nasal mites of birds from Louisiana. VII. The Ereyneidae (Speleognathinae). *J. Parasit.* **59**(2): 364–368.